

WHAT IS CLAIMED IS:

1. A method for inhibiting the proteolytic removal of an AAX tripeptide from a prenylated CAAX protein in a cell, comprising introducing a mutation into a gene selected from the group consisting of *AFC1*, and *RCE1*.
2. The method of claim 1, wherein the prenylated CAAX protein is selected from the group consisting of Ras protein, a-factor, and the  $\gamma$ -subunit of heterotrimeric G-protein.
3. A method for inhibiting the proteolytic removal of an AAX tripeptide from a prenylated CAAX protein in a cell, comprising blocking the activity of a second protein selected from the group consisting of Afc1p, and Rce1p.
4. The method of claim 3, wherein the method further comprises contacting the second protein with an inhibitor selected from the group consisting of 1,10-phenantroline and NME 181.
5. A method of identifying a compound which inhibits the proteolytic removal of an AAX tripeptide of a CAAX protein in a cell comprising:  
providing a test compound;  
contacting the test compound to a cell expressing both an *AFC1*, and an *RCE1* gene; and,  
measuring an activity selected from the group consisting of Afc1p activity, Rce1p activity, Afc1p expression, and Rce1p expression.
6. The method of claim 5, wherein activity is measured by monitoring heat shock sensitivity of the cell.
7. The method of claim 5, wherein expression is measured using an ELISA.

8. A method of detecting heat shock sensitivity, comprising:  
providing a plurality of aliquoted yeast strains in liquid;  
separating each strain into a test population of cells and a control population of  
cells;  
5 heating the test population of cells to a heat shock temperature of between about  
40°C and about 60°C for a time period of between about 30 seconds and about 10  
minutes, followed by cooling to a temperature of between about 0°C and about 35°C;  
growing the test population of cells and the control population of cells on growth  
media;  
10 quantitating the number of cells which grow on the growth media; and,  
comparing the number of cells in the test population and the control population,  
whereby the comparison of the number of cells in the test population and the control  
population provides a measure of heat shock sensitivity.

9. The method of claim 8, wherein the yeast strains are  $\Delta afc1$ , or  
 $\Delta rce1$ , or both  $\Delta afc1$  and  $\Delta rce1$ .

10. A vector comprising a nucleic acid sequence which encodes a  
polypeptide selected from the group consisting of Afc1p, Rce1p, and conservatively  
20 modified variations thereof, wherein the nucleic acid is operably linked to a promoter.

11. The vector of claim 10, wherein the nucleic acid sequence is  
selected from the group consisting of the sequences of SEQ ID NO:1 and SEQ ID  
NO:2.

12. A vector comprising a nucleic acid sequence which hybridizes  
under stringent conditions to a nucleic acid selected from the group consisting of *AFC1*,  
*RCE1*, and conservatively modified variations thereof.

13. The vector of claim 12, wherein the nucleic acid sequence is selected from the group consisting of the sequences of SEQ ID NO:1 and SEQ ID NO:2.

5 14. An isolated polypeptide encoded by the vector of claim 12.

15. The polypeptide of claim 14, wherein the polypeptide is selected from the group consisting of the sequences of SEQ ID NO:3 and SEQ ID NO:4.

10 16. An antibody which specifically binds to the isolated polypeptide of claim 14.

17. A recombinant cell transduced with the vector of claim 12.

15 18. The recombinant cell of claim 17, wherein the cell is a yeast cell.

19. The recombinant cell of claim 17, wherein the vector encodes a nucleic acid selected from the group consisting of the sequences of SEQ ID NO:1 and SEQ ID NO:2.

20 20. A kit for the detection of *AFCI* activity comprising a container and a reagent selected from the group consisting of a nucleic acid which hybridizes to SEQ ID NO:1, and an antibody which binds Afc p.

25 21. A kit for the detection of *RCEI* activity comprising a container and a reagent selected from the group consisting of a nucleic acid which hybridizes to SEQ ID NO:2, and an antibody which binds RceIp.

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